Abstract

Health is much talked about topic in today's society, likewise with sports. Sports and exercise have been introduced has an entranceway to healthier living styles. But increasing reports about how athletes and exercisers use doping agents that are contrary to health beliefs and recommendations from the World Anti-Doping Agency are found in the media. Body Image and eating disorders has also seen a rise in media reports, especially in the sporting world. Athletes are now models and are visible in all realms. Healthy attitudes and approaches to ones sports has been studied using self-determination theory's motivation orientations. Intrinsic motivation has shown strong correlations to athletic enjoyment, performance improvement and healthier lifestyles while extrinsic orientations has previously shown unhealthier sporting behaviors such as doping use. No previous study has tried to relate all three variables to establish construct to help coaches and trainers identify unhealthy behaviors. The paper discusses the health implications of motivation orientation, performance enhancement drugs, and body image and eating disorders.

Study: A study relating motivation orientation, doping behaviors and body image problems was conducted among local high school and college intramural athletes. Results showed that being task oriented was a protective factor against doping behaviors but no relation was found for neither motivation orientation and body image nor doping behaviors and body image.

Conclusion: Body image is a complicated factor that cannot be explained by motivation orientation. Motivation orientation was shown to be a protective factor against doping behaviors.

Sports and Health: The Influence of Motivational Orientation on Body Image and Doping Behaviors

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Preface

I would like to thank first and foremost Reidulf G. Watten at Lillehammer University College for being my advisor the last five years. He has shown me knowledge that I would never otherwise have discovered and was always there to answer my questions. He required me to meet high standards and taught me the value of constructive criticism. I would also like to thank the local schools, their administrators, and students that were eager to participate in the study. Special thanks is given to all the students and athletes I have had the pleasure to teach and coach, you gave me inspiration to develop the study. And I would like to thank my family who has not only grown in these years, but also been supportive and patient with all the work around this thesis.

Thank you

Ric Lugo

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1. Introduction

Sports have become intertwined with today's culture. We watch sporting events on television; we participate on organized or club teams; children participate, the elderly exercise. Sports are a realm to improve health; it can even be a career opportunity given the right circumstances. But sports also bring pressures and stresses not found in ones normal life. Competition, winning, exceeding goals, and self-promotion are only a few. These stresses and risks can lead to behaviors that are detrimental to one's health. Participating in events to win can lead athletes to use drugs to enhance performance. Athletes can also develop body image problems that can have serious complications. One's view of their body can make them adopt several behaviors that are maladaptive such as over-exercising, developing an eating disorder, and using illegal drugs to bulk up or lose weight. This paper will address the areas of doping behaviour, motivation and body image problems and then propose an intertwining of the concepts to see if there are any possible relationships between them. A study focused on relating these three themes was conducted and reported.

2. Doping

The recent history of sporting events is marred with reports of athlete doping. Athletes have responded to the Olympic slogan '*Citius, Altius, Fortius'* (faster, stronger, higher) by using illegal methods to gain advantages in their sports. This, in turn has cast a shadow of doubt over any athletic achievement. The World Anti-Doping Agency (WADA) was created in 1999 by the International Olympic Committee to combat the use of illegal performance enhancers, by having member Olympic countries, the governing sport associations, and athletes to adopt and adhere to their regulations and code (Coakley, 2003). WADA's goal is to banish all forms of doping so that athletes can compete on level fields and also insure the safety of the participants (Backhouse, McKenna, Robinson, & Atkin, 2007). WADA's code consists of fair play, health, performance, and sportsmanship and doping works contrary to this philosophy. Their message is given through educative services about the health risks associated with doping, and is controlled through random, unannounced drug testing of athletes by collecting urine and blood samples. These samples are processed by independent labs that treat all samples anonymously and report directly to WADA. If testing uncovers any violation of the above rules, then athletes are suspended for two years for first time violations and lifetime bans for second violations and athletes lose any accomplishments achieved (WADA, 2003). Several definitions of doping are found in today's literature. WADA defines a doping violation as (WADA, 2003):

- The presence of prohibited substances or metabolites or markers in an athletes specimen
- Use or attempted use of a prohibited substance
- Refusing to submit a sample for drug testing
- Athlete availability or neglecting reporting of whereabouts
- Tampering with doping controls
- Possession of prohibited substances or methods
- Trafficking of prohibited substances
- Administering prohibited substances

These definitions encompass all forms of doping. The most commonly used definition of doping involves the 'involvement of prohibited means to enhance performance, with the intention to gain competitive advantage over the opponent (Petróczi, 2007). WADA also states that the athlete is ultimately responsible for any substances that are used, both legal and illegal, unless they can prove that they were administered to them without their knowledge. But doping in recent years has been increasing despite these rules and control methods. Sports can provide instant fame, financial security, and respect, and these reasons are why athletes use such risky methods, even at the risk of dying.

2.1 Health Conflicts of Doping

Performance enhancement drugs (PEDS) or substances do help athletic performances (Wilmore & Costill, 2004). They differ from recreational drugs, even though they might be the same substance, through the reasons why the substances are used. Recreational drugs are seen as to please personal pleasures, while performance enhancing drugs are used to increase strength, concentration or endurance as well as desensitizing the athlete for pain (Stainback, Moncier III, & Taylor, 2007; Weinberg & Gould, 2003; Wilmore & Costill, 2004). Performance enhancing substances have an ergogenic benefits, enhancement properties, and are divided into four different categories: a) pharmacological agents, b) hormones, c) physiological, and d) nutritional agents (Wilmore & Costill, 2004). Not only do these substances carry with them several risk to athlete's health, they have ergolyctic, or detrimental effects to athletic performance.

Pharmacological agents are substances that are classified as drugs and benefit athletes via three routes: stimulants, β-blockers, and diuretics. Stimulants such as caffeine and

amphetamines stimulate the central nervous system, or the brain and spinal cord (CNS; Kolb & Whishaw, 2006; Wickens, 2005; Wilmore & Costill, 2004). Their proven effects include improving mental alertness, increasing concentration, decrease and delay the onset of fatigue, help athletes react faster, increase blood pressure and enhance the release of catecholamines (Kolb & Whishaw, 2006; Wickens, 2005; Wilmore & Costill, 2004). Research by Chandler and Blair (in Wilmore & Costill, 2004) showed that such stimulants showed marked increases in knee reaction strength, acceleration, time to exhaustion, peak lactate (muscle fatigue) that were statistically significant compared to placebo groups. β-blockers are drugs that, as opposed to stimulants, decrease the effects of the sympathetic nervous system, the system responsible for fight-or-flight response of the body (Wickens, 2005). The calming effects of β-blockers on the heart, especially in shooting sports, help athletes control muscles without the tremors that can be caused by heartbeats thus increasing accuracy. Diuretics are drugs that increase urine production by affecting the kidneys (Wilmore & Costill, 2004). Excreting excess fluids helps control weight and is used mainly by wrestlers, gymnasts, and other sports that favour light weights or weight controlling behaviour. Other recreational drugs such as cocaine, alcohol, marihuana, and nicotine have also been used as ergogenic agents by athletes. These pharmaceutical agents also come with ergolyctic effects as well as severe health risks. Stimulants are not only addictive, they can also cause heart attacks and high blood pressure while β-blockers can cause low resting heart rates (bradycardia), and increase fatigue. Detrimental effects of diuretics include excessive fluid loss, impaired thermal regulation and dehydration.

Hormonal agents are categorized into three types: anabolic steroids, human growth hormone and oral contraceptives and are the most used performance enhancement substances in sports (Martens, Dams-O'connor, & Kilmer, 2007; Wilmore & Costill, 2004). Anabolic steroids ergogenic effects include muscle mass growth, increase of power, facilitate recovery, improve mental attitudes, and increase training capacity and many studies support the findings that show the effectiveness of steroids (see Martens et al, 2007 for review). The ‘new’ drug, and hardest to detect in doping controls is human growth hormone (hGH; (Wilmore & Costill, 2004). Found naturally in the body and secreted by the anterior pituitary gland, athletes are finding ways to manipulate levels of hGH in the body. hGH affects the body but stimulating the synthesis of protein and bone growth, decreasing body fat, increase blood glucose levels (available energy for the body), and help the healing process of the body (Weinberg & Gould, 2003; Wilmore & Costill, 2004). Oral contraceptives are focused towards women and can

help them control their menstrual cycle. Studies have shown that some female athletes perform better in the follicular cycle (early stages of menstruation) phase as opposed to the ovulation or luteal phase and administering continuous low doses of oral contraceptives helps delay the onset of ovulation and keeping low levels of oestrogen and progesterone (Wickens, 2005; Wilmore & Costill, 2004). The effect of these drugs is the reason why many athletes adopt the use of these substances, and it also gives them the ability to control intake and testing. Hormonal agents can be cycled in such ways that they can leave the body free of detection when they are used in the offseason or weeks prior to competition and testing (Martens et al., 2007; Weinberg & Gould, 2003; Wilmore & Costill, 2004). The ergolyctic effects of steroids include liver failure, cardiovascular disease, and personality changes ('roid rage'). Men can suffer from low sperm count, and breast and prostate enlargement while women can suffer from masculinisation, breast regression, and irregular menstruation. The effects of hGH include enlargement of organs, diabetes, hypertension, and cardiomyopathy (deterioration of the heart muscle; (Wilmore & Costill, 2004).

Physiological agents are considered ergogenic aids. They help improve the physiological response of the body during competition by adding natural substances to the body. As opposed to pharmacological or hormonal agents which are manipulated synthetically, physiological agents are natural substances that are added to the body. The two most common physiological agents considered illegal are blood doping and erythropoietin (EPO; Wilmore & Costill, 2004). Blood doping involves extracting one's own blood (autologous) or someone else with same blood type (homologous) and injecting it into the athlete so that there is an increase in red blood cells at the time of competition (Wilmore & Costill, 2004). Red blood cells transport oxygen and an increase in oxygen in the blood helps increase endurance. Erythropoietin is a hormone responsible for the stimulation of red blood cell production and can be administered the same way as blood doping. Ekblom et al. (1972) and Ekblom and Berglund (1991) studies showed the effects of blood doping and EPO on endurance (in (Wilmore & Costill, 2004). They showed that blood concentrations increased 10%, VO_2 (oxygen uptake value in blood) increased 6% to 8%, and that time to exhaustion increased by up to 17%. These increases in endurance make these methods very attractive to athletes looking to improve performance. These methods also have serious side effects. Blood clotting and heart failure can are very common. Other serious hazards can include blood transfusion infections such as hepatitis or AIDS, and transfusions of mislabeled blood.

These illegal substances may have detrimental effects to performance alongside the enhancing effects, but many of them can lead to death (Striegel, Vollkommer, & Dickhuth, 2002). Ergogenic aids are not necessarily illegal. Hypnosis and carbohydrate loading have ergogenic benefits but are not listed as illegal performance enhancement methods or substances (Wilmore & Costill, 2004). Many sports allow the administration of pure oxygen to athletes during breaks. Nutritional agents such as amino acids, vitamins and supplements, are used by almost all athletes. These supplements can be laced with synthetic agents that are banned by WADA, and therefore WADA has placed all responsibility on the athletes (Backhouse et al., 2007; Wilmore & Costill, 2004).

2.2 Doping Theories

Why would any athlete want to take such health risks associated with doping? The theories behind doping are few but focusing of the problem has led to the production of some theories that can help guide professionals in their battle against doping. Doping use can be explained by physical, social, and psychological approaches.

Doping gives clear physical advantages as explained above. Not only do they help improve strength, speed, and endurance, but they can also aid in recovery from injury (Martens et al., 2007; Weinberg & Gould, 2003; Wilmore & Costill, 2004). The advantages of being stronger or faster are very tempting for elite athletes. When extrinsic rewards such as prizes and money are the focus of competition, athletes may turn to doping to improve their physical prowess in order to win (Striegel et al., 2002). Recovering from injury or the fear of losing a starting position can also be enough to incite doping behaviour. Other physical reason athletes turn to doping is a weight control and body image reasons, which will be addressed later.

Social pressures to begin using illegal drugs is well documented in research from the general public and the same holds true for athletes (Rees, Zarko, & Lewis, 2007). Peer pressure and curiosity may be enough to push an athlete to begin with performance enhancement drugs. But as opposed to the general public, it is argued that sports are a risk factor for commencing drug use due to the nature of sports (Coakley, 2003; Petróczi, Aidman, & Nepusz, 2008). Coakley (2004) uses the term deviant over conformity as one reason to explain doping. Over conformity happens when an athlete uncritically accepts the rules of the sport and the social response the athlete achieves. Sports supply exhilaration, praise (also in the form of money), and affects other people's lives (Coakley, 2004). This stems from the ethical nature of sports:

an athletes must sacrifice, strive for distinction, push through pain, and pursue dreams. These 'virtues' are heralded in athletes, but these same 'virtues' can lead an athlete to the use of PED's. Being a part of the 'elite' group can be a risk factor. Groups can normalize behaviour that is otherwise considered deviant (Hogg & Vaughan, 2005; Myers, 2002). If the group accepts or does not condone the use of PED's, then it is a viable solution for the individual athlete. Teams and athletes can be separated from the general population and receive special focus for their achievements. These two factors lead the athlete to develop a hubris, which has a spiralling effect (Coakley, 2004). Belonging to a group strengthens ones beliefs, commitment and behaviour (Hogg and Vaughan, 2005) and this can lead to behaviours that are not favourable. Groups have powerful influences over their members, and members can act against personal beliefs to please the group (Myers, 2002). Accepting these group norms can put athletes at risk to seek the use of PED's to not only for personal motives, but also for the benefit of the group, contrary to any personal beliefs one might have. Being a part of a team or athletic group increases the bonds to the other athletes, which further separates them from the general public, and this strengthening of bonds further increases the risk doping.

Psychological theories to explain doping are few. WADA funded an extensive research project in 2007 that encompassed all articles involving doping, behaviour and attitudes, and psychological models of doping behaviour was found to be missing in almost all articles with only a few models. The most common approach to explain unwanted doping behaviour is that of doping is a means to win or achieve financial rewards (Petróczi, 2007; Petróczi et al., 2008) focusing on promoting self-esteem or gaining rewards. Donovan and his colleagues (2002) based their theory on the Health Belief Model states that doping behaviour is based on cost\benefits, attitudes, personal and social reasons, such as the legitimacy of the sporting association and social contexts (in Petróczi et al., 2008). The theories mentioned above are only descriptive in nature, contain no theoretical framework for guidance for the causes of doping, and do not mention which factors can deter such doping behaviour (Backhouse et al., 2007; Strelan & Boeckman, 2003). A reason for explaining doping is offered by Strelan & Boekman (2003). Their theory, the Drug in Sport Deterrence Model (DSDM) is based on deterrence theory (Pasternoster, 1987) and states that behaviour to adopt doping is determined by a well thought out cost-benefit analysis and its consequences. Behaviour is based on positive attitudes towards doping, how easy doping is to perform, and social support for the behaviour. This cost-benefit analysis weighs the pros and cons of doping, including legal sanctions, personal health and social acceptance, and if the pros to committing the behaviour

outweigh the cons, then the athlete will start using PEDs. This model allows researchers to focus on why doping is used by focusing on the costs, the benefits and specific situational factors (Strelan and Boeckman, 2003). The authors of the DSDM are conscious that their model does not provide all variables in explaining nor does it give any formulas for stopping doping. It only serves as a basis for further research.

2.3 Research Findings Doping

Laure et al's (2008) long term study followed preadolescent French children from 6th to 9th grade (mean age of 11 years) that participated in extracurricular athletic activities and collected data from the same population four years later (Laure & Binsinger, 2007; Laure, Lecerf, Friser, & Binsinger, 2004). The first data collection showed that 1.2% of the children took doping agents and that this figure rose to 3% after four years and the substances varied from stimulants, steroids and endurance enhancers. The same study showed increases in frequency of use in all categories; daily, weekly, and monthly. Only a fraction (4%) of the participants that had taken PED's, reported health problems in the questionnaire but never told anyone else. A study of high school students enrolled in a French national sports school showed a 3-5% prevalence of PED use among the population (Laure & Binsinger, 2007). Males had higher rates than females (10% vs. 3%), team sports showed elevated rates over individual sports (9% vs. 6%), older students were more prone to use than younger (18 years vs. 15 years; 10% vs. 5%), and the amount of training was also significant (more than 12 hours per week; 11% vs. 6%). The WADA report show similar rates in other studies. Their study shows prevalence of 0.7% among preadolescent children while high school athletes had rates of 6.3%. College level and elite level athletes are more at risk for using illegal substances. Studies by Chng and Spence (1990, 1996; in Backhouse et al., 2007) show rates among college level athletes to be between 3,2% and 23%, but the high prevalence rates reported by Chng are misleading due to the inclusion of recreational athletes. Studies of elite athletes show that rates range from 1.2% to 8%. WADA's own testing against illegal performance enhancement substances shows positive results in only 2% of the sample, a number far below the high end rate reports from other studies. WADA's low findings are a cause for concern, not only in relation to the other studies that use self-reports as measurements, but in the 2000 Tour de France, 45% of all blood tests show anomalies, proving that testing lags behind methods for hiding drug use (Petróczi et al., 2008). However, self-reports usually report lower rates due to subjects responding in a social desirable manner, further clouting the reports (Alaranta et al., 2006; Backhouse et al., 2007; Petróczi et al.,

2008; Sas-Nowosielski & Swiatkowska, 2008). Performance enhancing substances is not only problem for elite and collegiate sports; it has trickled down to the high school and youth levels, causing concern for the health of children.

3. Motivation

Motivation is defined as 'a driving force responsible for the initiation, persistence, direction, and vigour of goal-directed behaviour (Coleman, 2003), and includes the biological and achievement needs. Unlike a need for food or to quench a thirst or to satisfy a sexual desire, motivation to participate in sports involves one's self and is part of one's identity and constitutes a level of mastery, achievement and development in a specific realm (Dweck & Leggett, 1988; Martin-Ginnis, Lindwall, & Prapavessis, 2007). Several theories have been proposed the last decades to explain motivation and these theories have shown that motivation is a complex process that can be affected by many variables. Bandura's concept of self-efficacy (Bandura, 1997) is just one key element that is vital to an individual. It lays the foundation for approaching, feedback and perseverance of an athlete within their sporting context, and this concept is in constant fluctuation (McAuley, Peña, & Jerome, 2001). An athlete can experience mastery and competence one day, only to feel defeat another time. Self-efficacy is considered an outcome-expectancy, in other words the ends specify the means. An individual improves his skills in order to achieve a certain goal. But what keeps them going if the goal is never reached? If winning and losing were all that was needed to explain motivation, then motivation could be explained through operant behavioral theories (Deci & Ryan, 1985; Vallerand, Deci, & Ryan, 1987). Behavioristic approaches regard the individual as a passive agent influenced by the environment, neglecting personal cognitions (Deci & Ryan, 1985; Vallerand et al., 1987). Recent theories have been developed to include other aspects of motivation, intrinsic as well as extrinsic factors, and situational factors. This is referred to as an 'organismic' approach where individuals are involved proactively, not passively, with their environment and feel connectedness, competence and autonomy (Deci & Ryan, 1985; Vallerand, 2007; Vallerand et al., 1987; Vallerand & Losier, 1999). The main theoretical approaches to sports motivation focus on autonomy, competence, and achievement goals theories.

3.1 Self-Determination Theory

Self-determination theory (SDT) explains motivation not only in sports, but also for any other activities that individuals pursue (Deci & Ryan, 1985, 2008; Vallerand, 2007). SDT regards intrinsic motivation for an activity as part of human nature and is within a conceptual

continuum ranging from amotivation (lack of motivation) to extrinsic motivation to intrinsic motivation. SDT is built on White's (1959) concept of effectance motivation which is described as an innate drive to build competencies which satisfy psychological satisfactions (in Ryan & Deci, 2007). Amotivation is the absence of any motivation and can find its origins in lack of self-efficacy or interest, negative experiences and consequences from prior attempts, or just feeling that the activity has no value (Deci & Ryan, 2008; Ryan & Deci, 2007). Extrinsic motivation separated into several aspects from external to integrated regulation and these correlate to a low to high autonomous motivation but not of fully intrinsic originality (Ryan & Deci, 2007; Vallerand & Losier, 1999). Having an external regulation makes one's cause of motivation based on gaining rewards or by avoiding negative experiences. Winning at this stage is the only reason to participate, it perpetuates continuation of the activity while losing makes one give up. Introjected regulation is concentrated on social approval or disproval. Opposed to winning and losing, introjected regulation is based on self-esteem and involves pride and shame. These emotions are social in nature as one sees themselves as others view them. Meeting standards (pride) of others or feeling guilty (shame) for failures is the basis for motivation. As with external regulatory motivation, introjected motivation influences the self by exerting external pressures and contingencies for success and failures. These forms of motivation are susceptible to high fluctuations of participations due to the ease of which negative experiences influence the person (Frederick & Ryan, 1995). External motivation is not only based on rewards and punishments, it can also be autonomous in nature but not fully intrinsic. Identified regulation is when an activity is done to reach a goal thus becoming autonomous but still based on an external goal, while integrated regulation is achieved when activities become part of one's life as it reflects ones values and/or needs as well as an activity that is done constantly (Vallerand & Losier, 1999). This still constitutes an external goal to be reached since the reason for the activity is another reward. Intrinsic motivation, on the other hand, is when activities are chosen and participated in without any external contingencies. These activities cause further participation not because of the end results or the prize of first place, but because one feels competent, challenged, interested and as belonging (Deci & Ryan, 2008; Vallerand, 2007). Intrinsic motivation domain is further separated into three interest areas, for knowledge, for accomplishment, and for stimulation.

Cognitive Evaluation Theory is a subcomponent of SDT and focuses on the events in the environment that effect the initiation or regulation of behaviour in a context and is based on three propositions (Deci & Ryan, 1985; Standage, Duda, & Pensgaard, 2005):

- perceived locus of causality must be intrinsic; any form for external feedback will undermine intrinsic motivation
- external events can influence perceived competence
- functional significance of an event for an individual can be perceived as informational, controlling, or amotivational.

Whereas the first two propositions relate to autonomy and competence, the third proposition can have different meanings for different people. Informational events increase internal motivation while controlling or amotivational events decrease intrinsic motivation (Deci & Ryan, 1985). This can involve and athlete putting value in winning after participating for many years without ever having such a view before. One form for a controlling event is the motivational climate (Biddle, Hagger, Chatzisarantis, & Lippke, 2007; Roberts, Treasure, & Conroy, 2007; Ryan & Deci, 2007). This can be a coach giving feedback, family or team support, or the presence of others. The motivational climate can be construed as informational or controlling depending on the individual (Roberts, 2001; Roberts et al., 2007; Sarrazin, Boiché, & Pelletier, 2007). A coach can be construed as controlling by a young gymnast, but the same type of coaching style can be seen as informational by a young football player. The context and individual differences are vital to how one evaluates one environment.

SDT along with its component theory, Cognitive Evaluation Theory (CET) state that when individuals experience both competence and autonomy along with a feeling of relatedness to the activity, then a feeling of intrinsic motivation will arise within the individual (Deci & Ryan, 1985; Ryan & Deci, 2007). This intrinsic motivation can be influenced positively and negatively by situational factors such as motivational climate and reasons for involvement. One can be intrinsically motivated, but then switch to an extrinsic reason when end goals are defined.

3.2 Achievement Goal Theory

Most research involving sports and motivation involves using an achievement goal theory (AGT; Roberts, 2001; Roberts et al., 2007; Standage et al., 2005). Based on the works of Ames (1992) and Nicholls (1989), achievement goal motivation assumes that individuals

approach to sports participation and its outcomes as cognitive attributions to the self. It is based on how perceptions and beliefs form the basis for interpretation of participation and outcome of activities forming a personal theory of achievement (in Roberts, 2001). One's personal theory of achievement stems from how one conceives ability: and undifferentiated approach, where one does not separate effort and ability, and a differentiated approach, where ability and effort is differentiated. It also affects the reasons one believes that lead to success (Roberts et al., 2007; Standage et al., 2005; Standage, Gillison, & Treasure, 2007). These attributions are defined as two separate approaches for the reasons to participate, task and ego-involvement (Roberts, 2001; Roberts et al., 2007). Task-involvement is developing competence, mastery, learning and ability is self referenced, meaning that one judges oneself by comparing how they did in relation to prior attempts and is considered undifferentiated. Task-involved individuals regard achievement as a meeting set of goals one has set out to achieve and working in relation to those goals. Ego-involvement regards ability as a social comparison. Such individuals judge their performance on comparing how they did in relation to others. An ego orientation involves a differentiated approach since effort does not necessarily mean ability, especially if one looses. Task and ego-orientations are not bipolar to each other but orthogonal, and the constructs have low to high range, giving a possible four type (2X2) possible combination. One can be high task/low ego, low task/low ego, high ego/low task and high ego/ high task. Each one of these categories has implications for adaptability within sports. Being low/task/low ego involved in an activity is defined as not being motivated. Reasons for this are still not mapped since the concentration of research has been on the other categories, leaving a void in the knowledge of the processes that lead to this state (Duda, 2001; Edmunds, Ntoumanis, & Duda, 2007). High task /low ego individuals show more persistence in their activities while high ego/low task individuals continue only if their social rating will not suffer (Duda, 2001). Being high ego/high task has been shown to be just as adaptive if not necessary for elite athletes. This is due to the fact that elite athletes need to be task oriented as well as compared socially. Their only reference to development is other elite athletes and winning or improving against the field is a strong motivator to continue (Duda, 2001; Gagné & Blanchard, 2007; Vallerand, 2007). AGT is considered a sequential stage theory and with different outcomes for individuals (Weinberg and Gould, 2003). The first stage is the autonomous competence stage that happens before the age of 4 and encompasses mastering and self-testing within ones environment. At this stage the activity is chosen because one engages and masters it without any social comparisons. The social comparison stage usually starts around 5 years of age involves comparing ones

performance and ability to others. The final stage is referred to as the integrated stage. This stage has no age base but instead an understanding of when comparisons to others or self-referenced standards should be used. Failing to fully integrate the previous stages can lead to maladaptive cognitions (ego-orientations) for motivation (Weinberg and Gould, 2003).

Self-determination and Achievement Goal theory have been theoretically connected using constructs from attachment theory and achievement goal involvement (Conroy, Elliot, & Coatsworth, 2007). Attachment and exploration theory is based on Bowlby's studies (1969) and furthered developed by Mary Ainesworth (1973; in Siegler, DeLoache, & Eisenberg, 2003) while achievement goal involvement describes how one interacts with ones environment by using cognitive representations of one's attachment style at a critical age of development (Elliot & Reis, 2003). Briefly summed up, one either develops a need for achievement (nAch) and an approach style of interaction or a fear of failure (FF) and avoidance approach is adopted. Conroy and his associates (2007) link intrinsic motivation, task-oriented involvement and a need for achievement with a secure attachment style from early development while ego-orientation involvement and extrinsic motivation to a fear of failure and an unsecure attachment. Intrinsic motivation and a task-involving approach are also linked to what Diener and associates (1999) refer to as subjective well-being (SWB). This concept also involves many factors such as culture and socio-economic status, and it relates to goals, and coping efforts (Deiner, Suh, Lucas, & Smith, 1999). Having elevated levels of SWB involves, among other, positive affect, enjoyment in activities, and healthy social relationships (for review see Diener et al, 1999).

3.3 Research findings Motivation

Research concentrating on SDT and the motivational climate in sports has shown that findings reflect that of other studies (Gagné & Blanchard, 2007; Ryan & Deci, 2007) and also predicted subjective well-being (Standage et al., 2005). Studies show that motivation rated as integrated or intrinsic predicted exercise adherence and adaptive coping styles, (Ryan & Deci, 2007; Wilson, Rodgers, Blanchard, & Gessell, 2003) while extrinsically motivated orientatins predicted dropout among swimmers and handball players (Sarrazin et al., 2007). Females and males differed in their ratings. Females report higher levels of social motivation motives while males rate competition as extrinsic reasons (Frederick & Ryan, 1993). Frederick and Ryan's (1993) study state that according to SDT, fun and enjoyment, fundamental factors of intrinsic motivation, are less prevalent among adults. The differences for these motives are

believed to be due to exercise versus competition. A study focusing on exercise and competitive cyclists found differences between the groups (Frederick-Recascino & Schuster-Smith, 2003). Exercise cyclists had higher rates of extrinsic motives for their participation. This group was more concerned with their appearance than was the competitive group. For the competitive group, intrinsic motives were more rated and showed higher rates of adherence. Competitive climates was the only factor to distinguish the two groups as they did not differ in general competition levels, leading the authors of the study to state that 'high sport competitiveness was positively rated to intrinsic sport motives' (Frederick-Recascino & Schuster-Smith, 2003, p. 251). The aforementioned studies all show support for the type of motivation and their adaptive /maladaptive consequences, but finding differences and identifying causes between groups have been minimal with only one study showing any results of between-group comparisons; the Frederick-Recascino and associate study (2003).

Achievement goal theory research has been vast and comprehensive and research has used several designs to advance findings (Roberts, 2001). Research has shown that individuals with high ego-involvement and low task-involvement have maladaptive tendencies for motivation while individuals with high task-involvement orientations use adaptive behavioral, cognitive and affective approaches within their sport or exercise (Biddle, 2001; Standage et al., 2005). Smith, Balaguer and Duda's study (2006) of soccer players aged 9 -12 years showed that children rate reasons for motivation similar to adults even if their moral reasoning is not equal. High task-involved subjects were better rated on competence and socially than low task-involved or high ego-involved subjects. High-task involved players rated themselves as being more skilful than other players giving support for higher self-esteem. In a well designed 4 group study, Standage and his colleagues (2005) compared individual and team participants on task\ego-involved conditions. By manipulating the feedback and conditions, subjects were separated randomly into 2 groups; individual or paired up with a teammate and each person or group competed against another equivalent group. After each trial, each group had feedback manipulated in such that they either received ego-involving or task-involving feedback. Ego-involving feedback comprised of scoring high, the goal was to defeating an opponent and the results would be posted on the school website. The task-oriented participants had their feedback manipulated by emphasizing improving performance and effort results while scoring or winning was downplayed. Their scores would also not be posted so no social comparisons could take place. At the end of the trials, a multi-section inventory was administered to the participants that measured affect valence and need satisfaction. Results showed that

participants in the ego-involving conditions reported higher negative affect and lower subjective well-being than the task-involving participants. This study also identified factors that can buffer negative affect and improve subjective well-being. Task-oriented messages, cooperation with a teammate in both ego and task conditions, were shown to be positive factors. Other studies have concentrated on the interaction effects of low\moderate\ high task\ego involvement. High task-involvement has been proven to promote adaptive strategies no matter the ego-involvement levels. Duda (2001) states that having both high task and ego-involvement is what separates elite athletes from sport and exercise practitioners. Duda and her associates have shown that goal orientations generalize to other domains and become stable traits (see Duda, 2001). Studies have identified maladaptive interactions of task\ego involvement (Hall, Kerr, Kozub, & Finnie, 2007; Smith, Balaguer, & Duda, 2006). The Smith and associates study (2006) have shown that youth that have high ego\low task involvement perceive the motivational climate differently than high task-involved youths focusing and social comparison and self-worth. They also experience fewer positive emotions from their activities and are judged less favourably from their peers. Lower levels of ego-involvement also correlated to lower perceived ability from the subject. The Hall and associates study (2007) identified high perceived ability coupled with ego-involvement can lead to obligatory exercise, where one's exercise becomes compulsive, rigid, inflexible and all consuming. Such behaviour is counteractive to physical and mental health. McArdle, Duda and Hall (under review) found that motivational debilitation was associated with low to moderate task \ high ego-involvement coupled with elements of neurotic perfectionism (in Hall et al., 2007). Such findings prove that having a moderate level of task-involvement is not necessarily enough to prevent maladaptive or adopt adaptive behaviour towards motivation. Tying these findings to approach theory, Hall theorizes that high task-involvement energizes both approach and avoidance goals and these factors alongside the pursuit of high standards, can lead to regulatory focus toward avoidance of demonstrating incompetence leading to obligatory exercise. The study by Hall (2007) also highlights differences of maladaptive behaviour between males and females. Doing separate regression analyses, result showed that women are more susceptible to men in developing obligatory exercising through perfectionism or self-worth measures, while can develop obligatory exercising behaviour due to a fear of failure.

AGT can explain many factors on how people approach their sports and exercise, while SDT discusses why people engage in such activities, but these two approaches overlap on many

dimensions. The Standage and associates (2005) study showed correlations between intrinsic motivation, task-involvement and SWB; correlations of lower SWB through higher levels of negative affect and ego-involved tasks, and through statistical analysis determined that SWB, including self-motivation and optimal functioning (intrinsic reasons) can be enhanced through competition and need satisfaction while ego-involved orientations negatively predict SWB. The Frederick-Recascino & Schuster –Smith (2003) showed that sport competitiveness correlated to both intrinsic motivation and task-involvement.

4. Body Image and Eating Disorders

Athletic participation among recent generations has expanded. The transition starts with childhood sports that focus on exercise and participation, move through adolescent\young adult sporting environments that focus on performance and competition, to adulthood sports and exercise maintenance if the goal of elite sports is not pursued. Eating disorders and body image stories have been increasing in the media the last decades, often parallel to each other. Body image distortions can lead to eating disorders (Ferrand, Magnan, & Philippe, 2005; Rouviex, Bouget, Pannafieux, Champely, & Filaire, 2007) What once represented the general public, sport figures now have pathologies and body image disturbances that have higher rates than in the general public (Sundgot-Borgen, Torstveit, & Skåderud, 2004). This section will focus on eating disorders and body image among athletes and relating the two areas to each other.

4.1 Eating Disorders

Eating disorders (ED) are defined as 'a class of mental disorders characterized by disturbances or problems associated with feeding or eating' (Coleman, A. 2003), and include anorexia nervosa (AN) and bulimia nervosa (BN) and are classified under early onset disorders in DSM-IV (Seligman et al, 2001) or behavioral syndromes associated with physiological disturbances and physical factors, F50 – F59, in the ICD-10 classification system (World Health Organization, 2005). Anorexia nervosa is identifiable as a fear of becoming overweight, refusal to maintain a normal weight, and disturbances with one's body image, and is characterized by a refusal of eating (restricting) or expelling through use of laxatives or vomiting (purging), the loss of menstrual cycles in women, and hypogonadism (low testosterone production from the testes) in men (Costin, 2007; Crosscope-Happel, Hutchins, Getz, & Hayes, 2000; Petrie & Greenleaf, 2007). Bulimia nervosa is identified by periods of binge eating followed by a sense control loss and shame, and finally purging, either

through exercise, vomiting, or using laxatives or other forms for the expulsion of food intake, and can lead to menstrual abnormalities in women (Petrie & Greenleaf, 2007; Seligman, Walker, & Rosenham, 2001). Binge eating, even though not a defined disorder, is similar to bulimia nervosa by high concentrated intake of foods but without the need to purge. Other eating disorders that are sub-clinical (not severe enough to be diagnosed as anorexia or bulimia nervosa) can be found on the same continuum as anorexia or bulimia, and are more prevalent than the extreme cases. These disorders are considered extremely difficult to treat with serious health consequences including death (Costin, 2007; Seligman et al., 2001; Wilmore & Costill, 2004).

In sports, eating disorders are a sensitive area. Studies show the prevalence of eating disorders among athletes is between 1% and 33% (Smolak, Murnen, & Ruble, 2000; Sundgot-Borgen et al., 2004) and have also been reported to be as high as 50% in elite level sports (Sundgot-Borgen et al., 2004; Wilmore & Costill, 2004) with rates for female athletes and eating disorders outnumbering male athletes by ten to one. The difference in the reported numbers is due to the unreliability of self-reports and that women endure more stress in athletics than men (Wilmore & Costill, 2004). Self-reporting may lead to attention to oneself and thus having to quit the sport, which may diminish the accuracy of the statistical reporting. Overall, prevalence of eating disorders is at least equal to the general population making it a subject for preoccupation.

4.1.1 Development of eating disorders in sports

Eating disorders in the general population is caused either by psychosocial disorder (Costin, 2007; de Bruin, Oudejans, & Bakker, 2007; Seligman et al., 2001) or a personality disorder, or PD (Costin, 2007; Larsen & Buss, 2005) and the same factors are relevant for their development in sports.

The psychosocial causes of eating disorders include low self-esteem, a deep need for autonomy due to parental over control where caloric intake gives the person a sense of control over the self, loss of control over dietary functions, either by restriction or over eating (Halvorsen & Heyerdahl, 2006; Seligman et al., 2001), dependency on extrinsic control factors, perfectionism, or strict either-or reasoning (Costin, 2007; Schwarz, Gairrett, Aruguete, & Gold, 2005). Studies also report that a child parent dysfunctional relationship may be a cause of EDs (Davis, Woodside, Olmsted, & Kaptein, 1999). Psychosocial causes

can act as the trigger for developing an eating disorder but is not necessarily the cause without a predisposition for the disorder (Costin, 2007; Sundgot-Borgen et al., 2004).

But sports bring other factors that can be triggers of eating disorders among the athletes. Many studies show that athletes encounter greater risks for developing ED because of the environment sports arena provide (Lakin, Steen, & Oppliger, 1990; Schwarz et al., 2005; Smolak et al., 2000). Weinberg and Gould (2003) have identified five major factors of how sports can trigger eating disorders. These factors have some similarities to the factors that are found in the general population, but also differ on some others. These factors are:

- Weight restrictions and standards – Many sports require specific weight classifications or divisions, such as wrestling, boxing, and weightlifting. 'Making weight' in order to compete is crucial and this can trigger the restriction of food or the over exercising that can be found among anorectics. Studies of wrestlers, rowers and other sports that require specific weights or limited weights for the athletes, have shown binge eating disorders, extreme weight loss methods such as vomiting, fasting, use of laxatives and diuretics, and the use of sweat suits for loosing body water (Baum, 2006; Lakin et al., 1990; Sykora, Grilo, Wilfley, & Brownell, 1993), with prevalence rates from 12% (Sykora et al, 1993) up to 52% (Baum, 2006). The focuses of the studies were male athletes, but similar numbers are found in studies for women (Schwarz et al., 2005; Smolak et al., 2000).
- Coach and Peer Pressure – Comments, either knowingly or unknowingly, from coaches or peers can also act as triggers for unhealthy eating behaviors. In a meta-analysis study by Smolak et al (2000), one of the main explanations for why people adopt the unhealthy behaviors often reflects coach or peer pressure. Cross-country skiing, skating, and wrestling among others are typical sports where pressure from peers or coaches can push an individual to adopt unhealthy strategies (Sundgot-Borgen et al., 2004).
- Sociocultural factors – as with ED in the general population, ED in sports can also be linked to ideals of the culture, such as media and cultural norms. Thin, top trained athletes are becoming the norm in society (Skåderud, 1998) and people expect athletes to represent this ideal.
- Performance demands – Results are increasingly more important. Top trained athletes demand better results for themselves leading to an increased focus on effectiveness.

This focus is also concentrated on having a lean body in order to produce high results, alongside the technical aspects of the sports. Correlations between low body fat and high levels of performance and been reported increasing the relationship of sports and eating disorders (Loumidis & Wells, 2001; Schwarz et al., 2005; Weinberg & Gould, 2003).

- Judging Criteria – similar to the extrinsic control factors of ED, judging criteria in sports comes in the form of judges informing athletes of their result based on factors that include physical appearance. Influence from judges can push athletes to pursue extreme eating behaviors. Such sports include ski jumping, gymnastics, and figure skating among others.

Personality disorders (PD) are often comorbid with other disorders such as depression, anxiety, avoidance, dependant or compulsive disorders (Larsen & Buss, 2005) and has a prevalence of comorbidity with eating disorders as high as 45% (Halvorsen & Heyerdahl, 2006). Casper (1990) has shown high obsessive-compulsive disorder, conformity and constriction of affect in anorexic patients while Bulik (1997) study shows prevalence of anxiety and depressive disorders among bulimics (in Davis et al., 1999). A study by Davis et al (1999) shows how personality factors, obsessive compulsiveness (OCD) among athletes, can also be an antecedent to eating disorders. Female athletes are more prone to ED than men in judged sports (Dosil, 2008; Sundgot-Borgen et al., 2004) and the greatest risk factor for female athletes for developing eating disorders was perfectionism, also a high correlate for athletic success (Schwarz et al., 2005). Homosexuality among male athletes is a risk factor that can increase the chances of the athlete developing anorexia nervosa, whereas heterosexual male athletes have only been shown to develop bulimic disorders or other non diagnosable eating disorders (Bramon-Bosch, Troop, & Treasure, 2000; Crosscope-Happel et al., 2000). Personality dimensions can be risk factors for both genders in developing eating disorders.

4.1.2 Biological and Social differences of ED and Athletes

The biological complications that are caused by eating disorders are numerous. The main biological complications in anorexia are lowered blood pressure, sleep disturbances, lowered thyroid gland functioning, increased secretion of cortisol by the adrenal gland (hormone related to stress), amenorrhea - loss of menstruation or oligomenorrhea – abnormal or

infrequent menstruation cycles in females (Costin, 2007; Dosil, 2008; Wilmore & Costill, 2004) and dysfunction in reproductive hormones and even death (Wickens, 2005). Recently, a relationship of anorexia and excessive exercise has leads to bone mineral disorders has been discovered, leading way to low density brittle bones (Wilmore & Costill, 2004).

Along with the already known side effects and dangers of eating disorders, females are at risk for other disturbing developments. The 'Female Athlete Triad' and consists of disordered eating, secondary amenorrhea (the disappearance of menstrual cycle due to vigorous exercise), and bone mineral disorders such as osteoporosis (Dosil, 2008; Petrie & Greenleaf, 2007; Wilmore & Costill, 2004). Secondary amenorrhea can also appear in athletes who do not have eating disorders and the prevalence among female athletes is around 50% (Wilmore & Costill, 2004). Osteoporosis leads to fragile bone and typically begins in normal females around the age of 30. Having an ED not only accelerates the process, it compounds the problem by depleting the reserves of essential minerals. One reason, along with an eating disorder that can cause menstrual dysfunction, is the amount of body fat a female has to maintain. The normal fat percentage for a female is around 15%. Any further decrease in body fat can lead to menstrual dysfunctions (Dosil, 2008; Wilmore & Costill, 2004). Men, on the other hand, can tolerate body fat indexes down to 1% without any physical dysfunction (Baum, 2006; Wilmore & Costill, 2004).

The studies mentioned above all show how women are at higher risks than males in developing ED. While males prevalence scores on BN studies have been around 1.1%, AN studies have shown minimal or no prevalence among male athletes, binge-eating scores, on the other hand, are greater among males than in females (13% vs. 10%; in Baum, 2006) with even higher rates (27%) among wrestlers (Lakin et al., 1990). ED among men is similar in their phenomenology as women, but men present vastly higher numbers of partial eating disorders. Eating disordered behaviors and anabolic steroid use is far more prevalent among males. Wrestlers, rowers, boxer, or any other sports that require making specific weights, will show high rates of binge eating and purging through exercising and thermal dehydration. Athletes that participate in various sports in the course of a year (high school level athletes) have some of the most dramatic shifts in weight, with such dramatic loss of weight resulting in death (Baum, 2006). Studies have shown that male athletes are susceptible to physiological dysfunctions such as body mass decomposition, renal function, electrolyte imbalance, nutrient intake, lowered testosterone levels and muscular strength and metabolic rate dysfunctions

(Dosil, 2008; Lakin et al., 1990). Woodside et al (2001) showed correlations of depression and substance abuse in male athletes with ED but did not find the same correlations of perfectionism or obsessive-compulsive behavior as with female athletes (in Baum, 2006).

Different sports display different patterns of eating disorders. Team sports or sports that require no specific weights show rates of ED among athletes that are equal to general population numbers. But sports that require technical abilities, endurance or weight differences show rates reported up to 50% prevalence of ED among athletes (Sundgot-Borgen, 2005; Weinberg & Gould, 2003). Low weight sports, including jockeys, ski jumpers and low weight wrestlers, display anorexic eating behaviors similar to models such as vomiting, and even incorporate preoccupation with self-image and weight into the psyche and develop harmful strategies that sustain such adaptations over to general life circumstances (Baum, 2006). Differences in weight classes have shown to produce different strategies of weight loss. Studies show that upper weight class wrestlers restrict fluid intake and use dehydration to lose excess weight while lower weight class wrestlers included severe food restriction practices in their strategies (Lakin et al., 1990).

4.1.3 Eating Disorder or Adaptive Behavior

No matter gender, these eating disorders are found throughout sports, with some sports showing greater contribution to the dysfunctions. Finn Skåderud (1998) calls sports and eating disorders a 'double edge sword' (summarized translation). This is due to the factors that both ED and elite sports are forms for loss of control. Skåderud continues by stating that the constant motivation for success is the factor leading to eating disorders. But is it? Many of the aforementioned studies show, alongside ED or personality disorders, dysfunctional eating behaviors that are considered maladaptive. These behaviors cannot be diagnosed under the disorders because either the time lapse is to short; symptomatology is not consistent with either DSM or ICD criteria, and is thus classified under eating disorders not otherwise specified (ED-NOS; Dosil, 2008; Wilmore & Costill, 2004). Norwegian exercise scientist, Jorunn Sungot-Borgen has proposed a third category of disordered eating, *anorexia athletica*, that may encompass athletic eating disorders and is characterized by (Wilmore & Costill, 2004, p. 594):

- An intense fear of gaining weight or becoming fat even though one is underweight (at least 5% under normal weight and age for the general female population)

- A weight loss of 5%, which is usually accomplished by a reduction in total energy intake often with extensive or excessive exercise, and
- Reported binging, self induced vomiting, or use of laxatives or diuretics

While this classification encompasses any type of eating disorder or dysfunctional eating behavior, some researchers are still weary with classifying dysfunctional eating behavior as an eating disorder. They argue that 'achieving individuation by attaining excellence in these endeavors often require rigorous self-denial and strenuous, painful exertion' (Skowron & Friedlander, 1994, p. 310). de Coverley Veale (1987) argues that the cause of weight loss may also be an adaptive function of playing and succeeding in the sport that one participates in such that the obsession with weight control and body dissatisfaction may be 'misdiagnosed' as psychopathology (in Skowron & Friedlander, 1994). One dimension that Skowron et al's (1994) studied focused on the use of punitive self-control methods vs. benign self-control methods. Based on Strauss's (1990) finding involving anorectic behavior, punitive self-control methods are defined as 'internal accusations on inadequacy, overburdening of the self, feelings of guilt and shame, and self restraint taken to punishing and tortuous ends' while benign self-control encompasses benevolent self-management and cultivation, realistic self-appraisal, and disciplined practice and pursuit of skills. Strauss et al (1990) found that AN patients in general populations suffered from far more punitive methods than benign methods (in Skowron & Friedlander, 1994). This study showed results that athletes did have higher rates of weight concerns, but their methods of control were benign methods instead punitive. They were able to reason from the results that weight control among athletes is an 'occupational hazard', are not necessarily suffering from eating disorders, and that those athletes that are struggling with achieving a sense of separation from their parents and establishing an adequate sense of self were the ones that showed punitive self control methods similar to AN patients in the Strauss et al study. They maintain that counselors and trainers need to supplement their evaluations with information on which strategies the athletes are using to achieve weight control so that they do not get misdiagnosed with eating disorders. This viewpoint minimizes problem-eating behaviors and is the counterpoint of coaches and athletes that stipulate strict eating habits and weight loss are a necessary factor in sports.

4.2 Body Image

Socio-cultural messages surrounding athletes gives mixed messages. Females are bombarded with lean, toned up images of female athletes while males see well trained, highly muscular

models (Gray & Ginsberg, 2007; Thompson & Cafri, 2007). Instead of focusing on leanness, strenght and thinness, recent research has been mainly around the idea of muscularity, for both male and female athletes (Thompson & Cafri, 2007).

The focus on female athletic research used to focus on eating disorders, but more current research has focused on a more muscular lean body (Gruber, 2007). The female body ideal is no longer a 'Marilyn Monroe' hourglass figure that was predominant has been replaced by athletic well toned bodies containing minimal fat composition, lower than the 12% required for normal menstrual function. Male body ideals have changed to an unhealthy image, big defined upper bodies and small waistlines. Similarities in perception of one's body have similar underpinnings for both genders, namely dissatisfaction with their current body from their ideal body (Garner, 2004; Johnson & Wardle, 2005). Studies show that body image distortions are found in athletic events that are the same as those for eating disorders. Females who participate in aesthetic sports such as gymnastics or figure skating rate their bodies as not ideal for their sport, and studies show that these types of sports have a high prevalence of compulsive eating disorders compared to sports that were not judged (Bachner-Melman, Zohar, Ebstein, Elizur, & Constatini, 2006; de Bruin et al., 2007; Ferrand et al., 2005). Males who compete in body building report dissatisfaction with their bodies similar to that of aesthetic sports for women, only that they wish to be bulkier instead of thinner (Goldfield, Blouin, & Woodside, 2006; Hallsworth, Wadw, & Tiggemann, 2005). Male body builders use the same techniques and have the same obsessions that anorexic and bulimic female athletes, develop body dysmorphic disorder (BDD; Klein, 2007; Olivardia, 2004). BDD was originally referred to as 'reverse anorexia nervosa' and describes males that are obsessed with becoming unnaturally bigger than they are, similar to the view anorexics have where they view themselves as too fat even if they have a weight that is too light compared to healthy standards. Sports that have weight classes also report eating disorders and body image dissatisfaction. But these athletes feel that being at lighter weights helps them compete at higher levels, as opposed to judged events were body image is crucial to outcome (Ferrand et al., 2005; Rouviex et al., 2007).

5. The Study

Professionals are in constant demand to have tools to predict and assess health behaviors and this is also true in the world of sports. The sporting community has expressed that there exists a lack of training in identifying behaviors that are detrimental to their athlete's health

(Tsorbatzoudis, Rodafinos, & Spiliopoulou, 2009). Self determination theory (Deci & Ryan, 1985; Ryan & Deci, 2007) and achievement goal theory (Roberts, 2001; Roberts et al., 2007) have been used to predict adherence to sports and exercise and can predict positive attitudes towards healthy lifestyles (Biddle, 2001; McAuley et al., 2001; Vallerand, 2001). This study will use these concepts in trying to predict behaviors that are related to current health issues, namely body image and doping attitudes. The study will contain three phases. The first step is the translation and standardization to Norwegian of Pelletier's Self-Motivation Scale (Pelletier et al., 1995) and the Performance Enhancement Attitude Scale (PEAS) developed by Petróczi (2007). Translation and standardization of batteries and theories has been prioritized by professionals and WADA in order to obtain comparable data across different cultures (WADA, 2003), a problem that persists throughout the social sciences. SDT and Achievement Goal theory have similar postulations, but research showing correlations between the two theories are few and this study will also attempt to relate SMS and the POSQ (Perception of Success Questionnaire;(Roberts, Treasure, & Balague, 1998).

The second part of the study will supply descriptive statistics that reflect the present behaviors. The variables studied other than SDT, POSQ, and PEAS is the perception of Body Image (Szymanski & Cash, 1995).

Motivation, doping and body image are the main focuses of unhealthy behavior within sports. The media's coverage of doping scandals and the focusing on well trained bodies have become two key areas professionals are trying to combat through prevention strategies, but knowledge about what people believe has been outdated even if it was done the last decade. The constant infiltration of mainstream commercialism focusing on athletic stars is present in every aspect and is influencing people of all ages. Looking like the next football hero is evident when the practices resemble the all-star teams with all the different club jerseys with the name of the top star on the back. Research in body image has focused on how the media's attention towards athletic bodies influences beliefs on one self's body with few studies focused on motivation (Markland & Ingledew, 2007). Attitudes and beliefs of today's youth do not reflect the attitudes and beliefs the previous generations. Doping behavior is one area that has shown increasing prevalence over the years (Laure & Binsinger, 2007; Laure et al., 2004; Martens et al., 2007). Doping research has been lacking in focus on beliefs and attitudes and concentrated on use. The theory of planned behavior (TPB; (Ajzen & Fishbein, 1977; Ajzen & Madden, 1986) incorporates attitudes, subjective norms (social acceptance of a

specific behavior) and perceived behavioral control and these three variables predict intentions (Ajzen & Madden, 1986; Tsorbatzoudis et al., 2009). The TPB has been used in many studies and has been able to account for up to 50% of behavior (Armitage & Connor, 2001). Another factor, not yet included in the TPB, is that of previous behavior. Past behavior is a strong predictor of future behavior (Connor & Armitage, 1998) and the research around past behavior has concluded that it is the best predictor of future behavior (Bargh, M., Lee-Chai, Barndollar, & Trötschel, 2001; Verplanken & Orbell, 2003) and this variable is relevant in predicting performance enhancement attitudes and use. This part of the study will focus on body image satisfaction and performance enhancers behaviors, among a general athletic group.

The third step of this study will attempt to relate motivational attitudes to both body image perception and doping attitudes. If any relation is shown, it can give coaches and frontline personnel a tool in identifying maladaptive behavior.

5.1 Research questions and Hypothesis

The research will establish translated forms of the SMS and POSQ. It will also examine the question 'do today's young Norwegian athletes have the same views toward doping and body image as previous studies?

Research hypothesis:

H1: Athletes demonstrating maladaptive motivation styles (high ego orientation, high extrinsic motivation) will report higher scores in pro doping attitudes and more dissatisfaction of their body image.

5.2 Participants

Anonymous questionnaires were given to two local high school and college student athletes who are active participants in sports but not necessarily at the elite level in the 'Østlandsregion' in eastern Norway. Prior studies have focused on specific groups or elite athletes but general information about active participants is less focused on. This study's aim is at the general athlete who participates not only for fun but also for competitions sake. Differences in reports among elite and general athletes vary on few dimensions, namely prestige, external rewards and attitudes. While elite athletes have shown more favorable attitudes towards PED use and higher body image dissatisfaction, sports participation has been considered a protective factor for students in general (Gould, Collins, Lauer, & Chung,

2007; Weinberg & Gould, 2003). Participants were selected through two local high schools and a local university college in eastern Norway that offered students an athletics major course in addition to general studies. The sports represented varied from 14 different areas but can be grouped as either individual or team sports. All students were informed verbally and written about the purpose of the study, and that they could withdraw at any time.

5.3 Measurements (Appendix 1)

The measurement batteries are focused on distal and proximal variables. Even though proximal variables can better predict behavior, such assessments are difficult for coaches and trainers to administer due to trust and training issues. Distal variables are easily observed and are more stable where as proximal variables fluctuate constantly due to their situational influence. This specific reason is why motivation is a key aspect of uncovering unhealthy behaviors so that distant stable traits are easier to notice than proximal traits.

Sports Motivation Scale - SMS

The SMS is the most widely used battery for testing motivation along the lines that Deci and Ryan established for researching self-determination (Pelletier et al., 1995). It is composed of 28 questions that distribute on seven factors ranging from amotivation, external motivation to intrinsic motivation. Amotivation was measured with items such as 'It is not clear to me anymore; I don't really think my place is in sport'. External motivation has three subscales: external regulation, introjected regulation, identified regulation, as does intrinsic motivation: IM – knowledge, accomplishment and stimulation. The external motivation scale maps on the external motivational factors of SDT, while the internal motivation scale expands SDT's intrinsic motivation and establishes 3 subsets of intrinsic motivation, knowledge accomplishment and satisfaction. Responses are given a seven point scale.

Perception of Success Questionnaire

Developed by Roberts (Roberts et al., 1998) and consists of 12 items that factor into two variables, task and ego orientations. The scales of each variable range from low to high and each variable does not stand alone but as a combination with the other variable giving the possibility of a range of low-high task\ low-high ego. Answers are given on a five point scale.

Performance Enhancement Attitude Scale

The Performance Enhancement Attitude Scale (PEAS) was developed by Petróczi (2007) as an attempt to standardize assessment for PEDs attitudes. WADA has taken her validated battery and urged for the translation and standardization of this assessment. It consists of 17 items focused on attitudes toward PED and four items that concentrate on belief. The PEAS is based on factors that have their origins in the Theory of Planned Behavior (Ajzen & Madden, 1986; Petróczi, 2007; Petróczi et al., 2008) attitudes, beliefs, subjective norms, and prior behavior. Attitudes and subjective norms are measured on a 7 point scale while doping beliefs are measured as agree-disagree and never answers with intentions and prior behavior having an extra answer – 'Do not wish to answer'.

Body Image - BI

Body image is measured using the Body Image – Questionnaire Expanded (Szymanski & Cash, 1995). It is an eleven item questionnaire each concentrating on specific body parts. Each question is divided into two factors - ideal body part and personal importance of each ideal body part. Each item is measured on a 4 point scale ranging from not important to very important. Ideal body parts and the importance of the ideal body part are discrepant and both discrepancy scales and the weighted discrepancy scale (total score) is used as a measure of dissatisfaction with body and appearance (body dissatisfaction), while the importance scale is used as a measure of the emphasis on body and appearance (body image importance).

Other included measures are the Rosenberg Self-Esteem scale, a 10 item scale giving a total score for self-esteem. The Theory of Planned Behavior (TPB) relates attitudes, beliefs, intentions, social norms and perceived behavioral control (PBC) to predict future behavior. It is a broadly used theory that can confidently predict behaviors and change (Armitage & Connor, 2001). PBC is similar to Bandura's concept of self-efficacy (1997) and is a predictor of self-esteem. Higher PBC correlates to higher self-esteem scores and this variable will be used as a proximal variable that will interact with motivational style to predict both body image dissatisfaction and pro PED use. The Eating Attitudes test (EAT-26) is a twenty six item assessment that focuses eating habits. Any score over 20 is considered disordered eating patterns that can be a sign of an eating disorder. It will be used in this context as a proximal predictor to body image disorders. Gender, birth year, sports student and type of sport were also collected. BMI was computed using the standard formula of weight (kg)/ height^2 (m). BMI will be used in conjunction with body image and eating behavior.

6. Results

Translation and Standardization

The translated version of the subscales of the Sports Motivation Scale all showed good reliability (table 1). Each of the seven subscales has four items relating to both an internal or external dimension of motivation and all translated subscales showed highly acceptable relation. The only subscale that showed lower than acceptable measures was the 'amotivation scale' which originally had a Cronbach's α= .593. The last item on the SMS amotivation scale 'I often ask myself; I can't seem to achieve the goals that I set for myself' can be misconstrued. The question does not reflect to a specific inner cause or can me misunderstood as a developmental adversity. Deleting this item increased the α-value to .795 giving it an acceptable to strong score.

Table 1:
Cronbach α scores for translation of SMS

SMS Subscale	Cronbach's α
IM Knowledge	.795
IM Accomplishment	.782
IM Satisfaction	.818
External Regulation	.743
External Identification	.747
External Introjected	.797
SMS - Amotivation	.795

The translated version of Petroczi's PEAS scale of 17 items regarding doping attitudes showed a high consistency rate with the original version. The attitude scale performed at a good rate of Cronbach's α= .915 while the other three subscales, beliefs, intentions and use, also showed acceptable α levels (beliefs α=.707; intentions α=.823; use α=.705).

Both the SMS and the PEAS show acceptable to good levels of reliability and are used further in the study.

Relating the SMS to POSQ only showed weak correlation on two subscales, the POSQ-Ego and the SMS external regulation correlated significantly (r=0,257, p< 0.01 level, two-tailed) and the POSQ task and SMS intrinsic motivation knowledge subscale (r=0,148, p<0,05 two-tailed). All further analyses will use the POSQ since the POSQ has been previously translated and standardized in Norwegian thoroughly by Roberts (1998).

Descriptive Statistics

A total of 502 questionnaires were given out with a total of 215 responses (42% response rate). Seven subjects delivered incomplete questionnaires leaving 208 valid responses for a final of 41% response rate where 40, 4% of the subjects were females. Eleven response sets were incomplete on certain subscales but were included in the study due to valid amount of reports on other scales. The average age was 21,3 years with a standard deviation of 4,3 years. The sample was homogenous and equally represented both individual and team sports (46% vs. 43% with 11% not reporting a sport or non athlete; Table 2). The main reported individual sports were Alpine and Nordic skiing while the team sport group was heavily represented in handball and football (soccer; see table for all included sports) while only 11% of respondents were non athletes not participating in sports or exercise programs.

Table 2
Sports Represented by Gender

	Male	Female	Total
Track & Field	2	2	4
Nordic Skiing	18	8	26
Alpine Skiing	19	5	24
Exercise\ Weight training	4	7	11
Cycle Sports	3	2	5
Martial Arts\Wrestling	5	2	7
Tennis\Squash	0	2	2
Equestrian	1	4	5
Other Individual Sports	5	4	9
Sports dance	4	9	13
Hockey	2	0	2
Football (soccer)	27	9	36
Handball	12	13	25
Bandy	2	2	4
Basketball	5	1	6
Other Team Sport	2	0	2
No Sports\Exercise	10	12	22
Total	121	82	203

Sports Types

The type of sport played, individual or team, did not have any significance with regard to other measures. Sports type did not correlate with or have any significance to PED's scales or motivation. All sports types show extremely low beliefs in performance enhancing agents while attitudes towards using the same PEDS was higher. The three main sports (Nordic and Alpine Skiing, and football) that had the most respondents had higher percentages of moderate attitudes towards doping (42%, 33%, 42% respectively) but no group was at a significant level. The highest percentage of moderate attitudes towards PED use was in fact the no-sport\ no-exercise group (50%). The type of sport played did not predict PED

intentions or use at significant levels, but the football group had higher levels since it was also the largest group but only on 'intention to use with restriction'. The group that had the highest rate of use with no restriction was again the no-sport\no-exercise group.

All types of sports showed slight dissatisfactions (85% of all subjects) with their body with no sport showing moderate or high levels of dissatisfaction. Body image importance also reflected similar levels with over 89% of the subjects reporting little to no importance of body image (63% and 29%) and all the sports had similar distributions regarding importance. The other measures all showed normal distributions of scores among the respondents. Motivational styles among the different type of sports were evenly distributed for both the SMS and POSQ scales.

Table 3: Descriptive Statistics of Measurements

	Min	Max	Mean	Std. Dev	Skewness	Kurtosis
Doping attitudes	11,00	99,00	36,45	16,84	1,16	1,19
Doping beliefs	0,00	4,00	0,27	0,76	3,12	9,79
Doping intentions	0,00	4,00	0,41	0,90	2,39	5,32
Doping use	0,00	4,00	0,33	0,81	2,45	5,40
SMS Amotivation	4,00	28,00	11,02	4,35	,763	,777
SMS External Regulation	4,00	28,00	13,37	5,09	0,19	-0,52
SMS External Identified	4,00	28,00	16,45	4,89	0,00	-0,22
SMS External Introjected	4,00	28,00	19,10	5,23	-0,48	-0,13
SMS Accomplishment	6,00	28,00	18,52	4,78	0,07	-0,38
SMS Knowledge	4,00	28,00	17,46	5,07	0,02	-0,35
SMS Stimulation	5,00	28,00	19,97	4,97	-0,33	-0,33
Task Orientation	6,00	30,00	24,98	6,09	-1,84	2,80
Ego Orientation	6,00	30,00	19,98	5,94	-0,32	-0,39
BI Importance	-0,82	2,36	0,78	0,58	0,09	0,00
BI Weighted	0,27	2,91	1,42	0,52	0,15	-0,31
BI Discrepancy	-1,55	5,64	1,38	1,11	0,85	1,01

SMS – Sports motivation scale, BI - Body image

Performance Enhancers

Attitudes and beliefs towards PED showed discrepancies. 87% of the subjects did not believe that PED are helpful but only 52% of them had negative attitudes towards them. This trend is also seen in the skewness and kurtosis of the scales (Table 3). Doping beliefs, intentions and use had high kurtosis means while attitudes measure was relatively low. The right skewness of the three scales also shows strong discrepancies between attitudes and beliefs. Intentions and current use, on the other hand, were similar and intentions strongly correlated to predicted use (r=.653, p<.01, 2-tailed). Almost 10% reported intentions to use PEDs with restrictions with another 3% further using without any restrictions. That number would jump to 15% with restrictions and 5% without if there was no possibility to get caught. Ten percent of the subjects reported already using illegal performance substances with restrictions or under supervision while 2% reported using such substances without restriction. Nine percent had reported 'use under supervision or restriction' with an additional 5% that used without restriction. Four of the six reported cases regarding who intended to use without restriction were already doing so. Following the guidelines of the theory of planned behavior attitudes, beliefs, intentions and use were all significantly related to each other (Table 4). A regression analysis shows that intentions strongly predicted use and accounting for much of the variance for the whole population as well as each gender separately (Table 5).

Table 4: Correlations - Doping Behavior

	1	2	3	4
1. Doping Attitudes	1,000			
2. Doping Beliefs	.336**	1,000		
3. Doping Intentions	.409**	.514**	1,000	
4. Doping Use	.406**	.473**	.653**	1,000

**p<0.01 level (2-tailed). p<0.05 level (2-tailed).

Table 5: Regression Table:
Independent Variable: Doping Intentions; Dependent Variable: Doping Use

	B	SE B	β	r	R^2	p
Sample *N*=200	0,590	0,048	0,653	0,653	0,427	<0,001
Males *n*=120	0,563	0,065	0,625	0,625	0,390	<0,001
Females *n*=80	0,723	0,078	0,723	0,723	0,522	<0,001

Differences between genders also were relevant to PEDs. Most females did not believe in doping agents (only 4 cases, 5% of females, 2% of all subjects) but their attitudes towards doping were less negative with 30% reporting somewhat moderate attitudes. Males scored higher in all four scales (Table 6) and at significant levels. Females reported a slight intention (10% of all females) but reported no use. A level of intention of use among males was high. Twenty-two percent of the males (13% of total) expressed intentions to use under certain restrictions, while 6% intended to use without any control or supervision from a doctor if possible. Males accounted for all use of performance enhancers without restrictions (six cases, 5% of all males, 3% of total population) while 16% (10% of total) reported use of PEDS with restrictions. Self esteem was not a proximal determinate of doping behaviors as it not have any significant relationship.

Table 6: Correlations of Male Doping Behaviors	
Doping Attitudes	,248**
Doping Beliefs	,175'
Doping Intentions	,243**
Doping Use	,174*
**p< 0.01; *p< 0.05	

Running an independent samples t-test to check for differences between genders, the groups showed significant differences; males had more positive reports than females on all subscales (Table 7).

Table 7 : t-Test male values for doping behavior			
	F	t	Sig.
Doping Attitudes	9,262	3,807	p<0,001
Doping Beliefs	26,935	2,732	p=0,007
Doping Intentions	59,394	3,996	p<0,001
Doping Use	28,282	2,777	p=0,006

Body Image

Gender did correlate significantly to body image and body dissatisfaction, but only to the 'slightly dissatisfied' and 'slightly important' levels where females had higher rates of dissatisfaction and put more importance in their body image (Table 8). Body image importance or dissatisfaction did not show any significance between individual or team sports. 77% and 84% of the total athletes (individual, team) reported slight dissatisfaction and importance. With regards to eating behaviors, all sports reported values that were mostly below 20 on the EAT-26 signifying proper relations to food. Only the weightlifters/exercise group and the non athlete group had more than half of the

Table 8: Correlations for Females and Body Image (BI)			
	1	2	3
Gender	1,000		
BI-Importance	.173*	1,000	
BI-Dissatisfaction	.183**	.251**	1,000
*. p<0.05 (2-tailed). **p< 0.01 (two-tailed).			

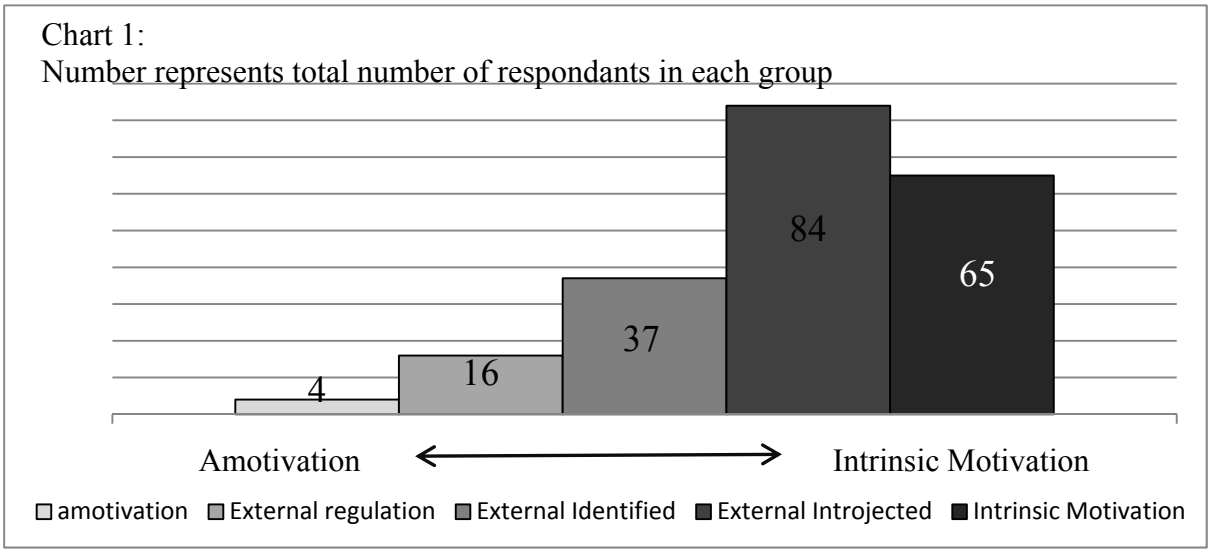
group respondents reporting maladaptive eating behaviors (3% and 7% respectively of all respondents) and this total was one third of all cases of disordered eating attitudes. Of the high rates of self-reports around disordered eating behaviors reported, gender was significant in relation to eating disorder treatments (Pearson's Chi-squared= 6,941, p<0,01) and females made up more than half of all respondents in all categories except binge eating. Induced vomiting and use of laxatives correlated to treatments of eating disorders (Table 9). Individual sports recorded more cases in all categories except binge eating but at non significant levels. Seven percent of the respondents reported BMI values that put them in the disordered categories: five percent had BMI values under 18.5 while 2% were labeled as obese (BMI>35). All groups did not have more than one reported problem within BMI except the sports dance group, which had three of the 10 reported cases of BMI<18,5. Seventy four percent reported normal BMI's (18,51- 24,99) with another 19% in the overweight group, but there was no significant difference between individual or team sports regarding BMI. A slight inverse correlation between BMI and body image importance was reported but no such relationship was found for body image dissatisfaction (r=-0,174, p<0,05 2-tailed). Referring to the EAT-26 as a proximal variable for prediction of body image discrepancies, this was true for females but not for males (F=13,688, r=,409, t=3,700, p<0,001).

Table 9: Gender and Eating Disorder (*N* = 203)	1	2	3	4	5	Occurrences (females)
1. Gender	1,000					
2. Binge Eating	,014	1,000				47 (20)
3. Induced vomiting	,098	.275**	1,000			20 (11)
4. Laxative	,080	.252**	.291**	1,000		19 (10)
5. Eating Disorder Treatment	.195**	.227**	.454**	,054	1,000	13 (10)
**p<0,01 level (two-tailed).						

Motivational Styles

Measurements of the SMS showed that the scale was on a continuous dimension. Both the descriptive statistics and respondents self reports show this trend. All means ascended from amotivation to intrinsic measures (Chart 1). Only 2% of respondents were amotivated, but one fourth of the sample reported some moderate levels of amotivation; oddly, none of the no-exercise group had high levels and reported mostly low levels of amotivation. Moving to external regulation, only 8% of the students stated that their motivation was based on external factors (6,4% of this male) while males did report more moderate levels of external regulation over the females (51% vs. 38%). External identified values showed an increase of moderate

and high levels making up 18% of all responses. Following the same patterns of growth along the continuum, external introjected reports composed evenly of high and moderate scores (43% and 45%) and made up 41% of the SMS scale. Continuing along the dimension to internal motivation, 32% reported having moderate to high intrinsic motivation. (52%/ 36% - male/ female). Over two thirds of the sample had high levels of motivation that is found on the intrinsic side of the SDT motivation scale. Relating the SMS to other measures shows some degree of correlation. Intrinsic motivation inversely correlated to body image dissatisfaction (r=-,228, p<0,01 two-tailed) while only one external motivation subscale (introjected) related to body image (r=,180, p<0,05 two-tailed). A regression analysis between SMS and performance enhancements only showed significance for external regulation (β=0,354, t=4,278, p<0,001), and controlling for gender, significance only arose for males (t=3,243, p<0,05).



POSQ

Measuring the POSQ showed that most students scored within the high task orientation (Table 10). Females had higher rates of high task orientation but gender was not significant (p=0,561). Males and females scored similarly on the ego scale with most cases within the moderate range (48%). Females reported higher rates of low ego orientation whereas males reported slighted higher rates of high ego orientations, but both cases at non-significant levels (Pearson Chi Square = 5.212, p=0,074). The POSQ produced some similar results with regards to the SMS in terms of self-determined behavior, where moderate to high task orientation is considered to be on the intrinsic motivation scale of SDT. Other similarities also arose. Amotivation in POSQ is measured by low task\low ego (3,6%) where as SMS measured 2%. Grouping the moderate to high ego measures with the high task measure

showed that over two thirds of the sample had task orientations that interacted with moderate to high ego orientations.

Task orientation had an inverse correlation (r=-0,188, T= -2,696, p<0,01) to doping attitudes and doping use (r=-,232, T=-3.323, p<0,001) while ego orientation showed no significant relations to doping behaviors. Further analysis showed that males were less inclined towards positive doping behaviors on three subscales when their task orientation was high (attitudes β= -0,227; beliefs β=-0,218; use β= -0,217, p<0,05). With regards to body image, neither task nor ego orientation had any significant relationship.

Table 10: POSQ Task * Ego Distribution

N=205		POSQ Ego			
		Low	Moderate	High	Total
POSQ Task	Low	3,6%	3,1%	1,6%	8,3%
	Moderate	1,6%	6,2%	2,6%	10,4%
	High	13,0%	38,3%	30,1%	81,3%
	Total	18,1%	47,7%	34,2%	100,0%
r=0,175, p<0,05 (two tailed)					

7. Discussion

Male respondents represented the majority of the respondents, making full group wise comparisons more difficult but the population was evenly represented within the sports. Many studies have been focused on specific sports while this study sampled a general athletic population making results difficult to generalize to other sports; but these same results can be useful to a general population about the benefits and risks of athletic participation.

Standardization and Integration of Theories

Satisfactory reliability was found for the SMS and the PEAS translated versions (Table 1). Some minor changes to the subscale of the SMS-amotivation were necessary to meet the required minimum acceptable reliability α-coefficient. One item had to be dropped due to the ambiguity that could be interpreted as a motivational cause or a personal skill cause. But deleting this item strengthened the scale to good levels.

In trying to relate the Pelletier's (1995) SMS scale and Robert's (1998) POSQ scales, only partial overlapping was found. The SMS measures different dimensions within the SDT framework on a continuous dimension while the SMS measures values of each the bipolar dimensions. The problem in correlating the two scales could also be due to the nature of the questions. The POSQ seems to be more concentrated on evaluating achievements through goal appraisal, a form for learning and knowledge. Statements such as 'show improvement', 'achieve personal goals', and 'overcoming difficulties', all have a learning dimension to them. The SMS scale has been expanded to include other intrinsic motivation factors that the POSQ does not account for within the measurement. The POSQ scale was used for further relationship testing due to the broad application possibilities of the scale and its strength of prediction. Both scales need further testing to correlate them to each other in more specific studies.

Study results

After an analysis of the data, troublesome relationships arose in the area of performance enhancers (Table 3). Attitudes and behavior did not correspond strengthening the results of other studies (Petróczi, 2007; Petróczi et al., 2008). High self-reports of intentions and use, were similar to other studies (Backhouse et al., 2007; Laure et al., 2004) while higher than previous culture studies (Barland & Tangen, 2009). The discrepancy of using and using if one would not be caught is another troubling trend. The increase reflects important facets of Deterrence theory (Pasternoster, 1987). Not being caught is a factor that is a determinant for doping prevention and if the possibility to cheat undetected were present, higher rates of use would be present. Gender was also a significant factor. Males showed more positive behavior towards performance enhancers and all reported cases of intention and use were male athletes while females showed more congruence between attitudes and their beliefs (Table 6 & 7). The fact that almost half of the subjects had neutral or pro PED attitudes, even if they believed they did not have any beneficial effects, shows that young athletes, especially males, may put more moral value into winning and prestige. The subjects were all of from schools that offered sports as a major subject of study and discussion around dangers and rule violations around the use of enhancers is frequently brought up. The variables within the TPB except self-esteem, strongly explained doping behaviors. These results coupled with DSDM also show how defeciencies of anti-doping campaigns. The increase in self reports from intention and use (26 respondents - 13%) to intended use if not caught (41 respondents - 20%) show that health factors are less valued than extrinsic factors, but that fear of being caught is a

deterrent. Problems with self reports in this study could be present as in other studies (Backhouse et al., 2007; Petróczi, 2007; Petróczi et al., 2008; Sas-Nowosielski & Swiatkowska, 2008). A related problem within this study is that prescribed medications from doctors was not specified. Respondents may have omitted the use of any prescribed drugs while others may have included them. If under reporting is the case then there is cause for more concern around the issue.

The results surrounding body image were promising in some areas while disconcerting in others. Significance relationships were found between BMI, eating behavior and body image but respondents only had weighed body image mostly as 'slightly important' and were generally only slightly dissatisfied with their bodies and gender did not play a significant role. Considering the developmental stage of the sample, sports could be seen as a protective factor against body image disorders. Other studies focused on athletes have shown body image problems but this may be due to the fact that other studied samples were focused on specific groups especially judged and weight requirement sports, where reports of body image show high discrepancies and dissatisfactions (Garner, 2004; Johnson & Wardle, 2005). Females did have more reports of disordered eating but males had higher rates of binge eating (Table 9), copying the results from similar studies (Baum, 2006; Sundgot-Borgen et al., 2004). The EAT-26 was a reliable measure for predicting problem eating behaviors especially among females. The EAT-26 as measured by this group can also be misleading. The respondents are mainly adolescent to young adults, and as with anyone in the developmental stage, relations to food can be clouded by other factors. Social or peer pressures, establishment of control, or even physiological needs, can dictate how one relates to food. The majority of respondents had normal BMI scores. Within the sports arena, BMI-indexes have been proposed to be restructured due to the difference between muscle and fat weight (Deurenberg, Yap, & van Staveren, 1998). The Deurenberg et al (1998) shows inconsistencies between cultural groups and BMI scaling. They show that higher BMI does not identify unhealthy muscle-fat proportions but only gives an accepted standardized number that relates height and weight instead of muscle-to-fat ratio, as hydrostatic weighing does, which is also considered the gold standard for measuring body composition. Different ethnic groups were shown to have different compositions even if they had equal BMI's and these findings can be generalized to athletic arenas. Muscle outweighs fatty tissue and many athletes in this study are well trained. BMI indexes showed that 8 respondents (six males and two females) weighed more than 95 kilos, but only 4 of these were considered 'obese' (3 females, 1 male). Two of the three

females that reported being obese were from sports that require muscle mass (weight lifting, alpine skiing) while the third was a non athlete. Males had only one representative in the 'obese' category, and he was an active soccer player. These results surrounding BMI measures contribute to the debate of restructuring the BMI scale to fit the different athletic arenas. BMI within weightlifting would not correspond to BMI within gymnastics.

Motivation

The study was focused on ego or extrinsic motivational styles predicting maladaptive eating and doping behaviors, but this was not supported from the data gathered. Ego orientations and extrinsic orientations, which were expected to predict higher rates of doping behaviors or body image dissatisfaction, showed no relation. All groups showed high task orientation and intrinsic motivation (Chart 1 & Table 10) meaning that the athletes of this study were well adjusted to continue within their sports. Having a high task orientation, however, did inversely predict, doping behaviors, as opposed to the findings by Petróczi (2007) and partially supporting the tested hypothesis in an indirect manner. This was especially significant for males. A high task orientation showed to be a protective factor according to TBP variables for doping behaviors (attitudes, intention, and past use).

8. Conclusion

Sports can be seen as a mild risk factor for males with regards to use of illegal substances, while girls are more prone to problem eating behaviors. The athletic arena offers a climate for challenges and social comparisons that can be interpreted in maladaptive ways by athletes. The mildly positively attitudes, coupled with a higher intentions of use if the chance for being caught, was troublesome. Use of PEDs was predicted by factors of the Theory of Planned Behavior, especially intentions and prior use. The incongruence between beliefs and attitudes shows that social factors such as social norms have an influence that contributes to the discrepancy. But sports offer many benefits that also were present within this study. Athletic arenas offer the ability to train one's body so that one can maintain a healthy relationship with foods and promote positive body images. This study has shown that athletic involvement increases positive body image developments that are healthy such that social influences that are focused on unnatural body images can be minimized. BMI is a debated issue within the sports community and these results contribute to that debate. BMI measures have to be readjusted in ways that reflect the different sports. BMI has to be a case by case issue and not

a standard across all sports. BMI differences between sports are greater than the BMI differences within each sport. Gymnasts, dancers and other judged sports are susceptible to low weights and distorted body images, while team sports and weightlifting, among others, do not offer the same opportunities for image judgments. Motivational styles were intrinsically weighted according to self-determination theory. The studied athletes mostly showed high task and intrinsic value with few exceptions. High task orientation, an important measure to predict joy, adherence and goal achievement, was also a predictor for low doping use especially among males. Even if no connection was directly established between motivation orientation and body image, one cannot say that the factors are not related. They may in fact interact through other variables not measured within this study. Other studies have shown some degree of relationship between body image and self-determination theory, with other measures (Markland & Ingledew, 2007). This contributes to the notion that the motivational climate surrounding the athletes in helping promote a high task or intrinsic motivation is an important factor that can help diminish the use of performance enhancers and .

Research around body image and doping needs to be strengthened. The factors of both Deterrence theory (Pasternoster, 1987) and the theory of planned behavior (Ajzen & Madden, 1986) in regards to doping behavior has to be further developed in order to help fight increasing pro attitudes toward illegal drugs and keep sports clean. Body image issues need to be compared within groups between situations. The study viewed body image discrepancies related to their sport, but it did not consider body image beliefs as related to everyday life. One may be satisfied with their body for the sport that they play but may view themselves as overweight otherwise. Motivation only showed a small relationship to doping attitudes but not body image, while other factors may be closer tied in to both variables. Further studies such take personality factors in consideration, such as perfectionism, sensation seeking or other specific personality traits to uncover any relationships that might exist.

This study focused on showing how motivational style, a variable that can be easily seen by coaches and parents, related to body image and doping behaviors. It did not directly predict that a maladaptive motivational style influenced body image distortions or doping behaviors, but it did help strengthen studies that focused on the importance of being intrinsically motivated. This knowledge can help coaches construct a better training and motivational climate to promote intrinsic behaviors in such ways that it will affect belief and attitudes in more troubled areas.

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Appendix - Questionnaire

Spørsmålene som følger omhandler om hvorfor du deltar i idretten din. Sett kryss i ruten til svaralternativet du vil velge.

Jeg deltar i idretten min:	Sterkt Uenig						Helt Enig
For gleden jeg føler i opplevende situasjoner.	1	2	3	4	5	6	7
For gleden det gir meg for å vite mer om sporten som jeg deltar i.	1	2	3	4	5	6	7
Jeg pleide å ha gode grunner for å drive med idrett men nå spør jeg meg selv om jeg bør fortsette å gjøre det.	1	2	3	4	5	6	7
For gleden av å oppdage nye treningsteknikker.	1	2	3	4	5	6	7
Jeg vet ikke lenger, jeg har inntrykk av at jeg ikke lykkes i denne sporten.	1	2	3	4	5	6	7
Fordi jeg får respekt av folk som jeg kjenner.	1	2	3	4	5	6	7
Fordi, etter min mening, er det en av de beste måtene å møte folk på.	1	2	3	4	5	6	7
Fordi jeg føler mye personlig tilfredsstillelse samtidig beherske visse vanskelig treningsteknikker.	1	2	3	4	5	6	7
Fordi det er helt nødvendig å trene hvis en ønsker å være i form.	1	2	3	4	5	6	7
På grunn av prestisjen til en idrettsutøver.	1	2	3	4	5	6	7
Fordi det er en av de beste måtene jeg har valgt å utvikle andre sider av meg selv.	1	2	3	4	5	6	7
For gleden jeg føler mens jeg forbedrer noen av mine svake punkter.	1	2	3	4	5	6	7
For spenningen jeg føler når jeg virkelig er involvert i aktiviteten	1	2	3	4	5	6	7
Jeg må trene for å føle godt om meg selv.	1	2	3	4	5	6	7
For tilfredsheten jeg opplever mens jeg tilspisser mine evner.	1	2	3	4	5	6	7
Fordi folk rundt meg synes det er viktig å være i form.	1	2	3	4	5	6	7
Fordi det er en god måte å lære mange ting på som kan være nyttig for meg på andre områder av livet.	1	2	3	4	5	6	7
For de intense følelser som jeg føler når jeg gjør en sport som jeg liker.	1	2	3	4	5	6	7
Det er ikke klart for meg lenger, jeg tror ikke min plass er i idretten.	1	2	3	4	5	6	7
For gleden jeg føler når jeg samtidig gjennomfører vanskelig bevegelser.	1	2	3	4	5	6	7
Fordi jeg ville føle meg dårlig hvis jeg ikke tar meg tid å gjøre det.	1	2	3	4	5	6	7
Å vise andre hvor flink jeg er flink i min idrett.	1	2	3	4	5	6	7
For gleden som jeg føler mens jeg lærer treningsteknikker som jeg aldri har prøvd før.	1	2	3	4	5	6	7
Fordi det er en av de beste måtene å opprettholde gode relasjoner med vennene mine på.	1	2	3	4	5	6	7
Fordi jeg liker følelsen av å være fullstendig opptatt av en aktiviteten.	1	2	3	4	5	6	7
Fordi jeg må gjøre trene regelmessig.	1	2	3	4	5	6	7
For gleden av å oppdage nye ytelse strategier..	1	2	3	4	5	6	7
Jeg lurer ofte på om jeg når opp til de målene som jeg har satt for meg selv.	1	2	3	4	5	6	7

Spørsmålene som følger omhandler ulike aspekter ved kroppen. For hvert aspekt, tenk på hvordan du faktisk er og hvordan du ideelt sett skulle ønske du var. I delspørsmål A skal du angi hvor mye du ligner ditt personlige kroppslige ideal (hvordan du skulle ønske du var).

Du kan føle at noen av dine kroppslige idealer/ønsker er veldig viktige, dvs. betyr mye for hvordan du vil være eller se ut, mens andre er mindre viktige for deg. I delspørsmål B skal du angi hvor viktig hvert av idealene/ønskene er for deg.
Sett kryss i ruten under det svaralternativet du vil velge.

1A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede høyde er…	□	□	□	□

1B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede høyde for deg?	□	□	□	□

2A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede hud er…	□	□	□	□

2B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede hud for deg?	□	□	□	□

3A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede hårtype (f.eks. fint eller kraftig) og -kvalitet (f.eks. fett eller tørt) er…	□	□	□	□

3B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede hårtype og -kvalitet for deg?	□	□	□	□

4A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Mine ideelle/ønskede ansiktstrekk (øyne, nese, ører, ansiktsform) er…	□	□	□	□

4B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er dine ideelle/ønskede ansiktstrekk for deg?	□	□	□	□

5A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede muskeltonus og -definisjon (markerte muskler) er…	□	□	□	□

5B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede muskeltonus og -definisjon for deg?	□	□	□	□

6A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Mine ideelle/ønskede kropps-proporsjoner er…	□	□	□	□

6B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er dine ideelle/ønskede kroppsproporsjoner for deg?	□	□	□	□

7A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede vekt er…	□	□	□	□

7B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede vekt for deg?	□	□	□	□

8A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede bryststørrelse (menn: størrelse på brystet) er..	□	□	□	□

8B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede bryststørrelse for deg?	□	□	□	□

9A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede fysiske styrke er..	□	□	□	□

9B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede fysiske styrke for deg?	□	□	□	□

10A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Min ideelle/ønskede fysiske koordineringsevne (motorikk, kroppsbeherskelse) er…	□	□	□	□

10B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er din ideelle/ønskede fysiske koordineringsevne for deg?	□	□	□	□

11A.	Akkurat som jeg er	Nesten som jeg er	Ganske forskjellig fra meg	Veldig forskjellig fra meg
Mitt ideelle/ønskede kroppslige utseende samlet sett er…	□	□	□	□

11B.	Ikke viktig	Litt viktig	Ganske viktig	Veldig viktig
Hvor viktig er ditt ideelle/ønskede kroppslige utseende samlet sett for deg?	□	□	□	□

INSTRUKSJON: Sett sirkel rundt det passende tallet for hvert av de 10 utsagnene nedenfor, avhengig om du er: helt enig (1), enig (2), uenig (3) eller sterkt uenig (4)

		Helt Enig			Sterkt Uenig
1.	Jeg er stort sett fornøyd med meg selv.	1	2	3	4
2.	Noen ganger synes jeg at jeg ikke er god for noen ting.	1	2	3	4
3.	Jeg synes at jeg har flere gode kvaliteter.	1	2	3	4
4.	Jeg er i stand til å gjøre ting like godt som folk flest.	1	2	3	4
5.	Jeg føler at jeg ikke har mye å være stolt av.	1	2	3	4
6.	Til tider føler jeg med ubrukelig.	1	2	3	4
7.	Jeg føler at jeg er en verdifull person, i det minste på samme nivå som andre.	1	2	3	4
8.	Jeg skulle ønske at jeg hadde mer respekt for meg selv.	1	2	3	4
9.	Alt i alt er jeg tilbøyelig til å føle meg mislykket.	1	2	3	4
10.	Jeg har en positiv innstilling til meg selv.	1	2	3	4

Hva betyr å lykkes i idretten til deg? Det finnes ingen rett eller galt svar. Sett kryss over bokstaven til svaralternativet du vil velge.

Når jeg deltar i idretten min jeg føler meg mest vellyket når:	Sterkt Uenig		Hverken enig eller uenig		Strekt Enig
Jeg slår andre	A	B	C	D	E
Jeg er overlegen	A	B	C	D	E
Jeg er den beste	A	B	C	D	E
Jeg jobber hardt	A	B	C	D	E
Jeg viser tydelig fobedringer	A	B	C	D	E
Jeg utkonkurrer motstanderne	A	B	C	D	E
Jeg oppnår et mål	A	B	C	D	E
Jeg overkommer vanskeligheter	A	B	C	D	E
Jeg oppnår personlige mål	A	B	C	D	E
Jeg vinner	A	B	C	D	E
Jeg viser andre at jeg er den beste	A	B	C	D	E
Jeg gjør mitt beste	A	B	C	D	E

Hva føler du om doping? Alle svarene er anonyme og det finnes ingen rett eller galt svar. Vennligst kryss nummeret som best stemmer med ditt svar.

	Sterkt uenig			Hverken enig eller uenig			Sterkt enig
Doping er nødvendig for å være konkurransedyktig.	1	2	3	4	5	6	7
Doping er ikke juks fordi alle gjør det.	1	2	3	4	5	6	7
Idrettsutøvere ofte taper tid på grunn av skader og dopingmidler kan bidra til å gjøre opp for tapt tid.	1	2	3	4	5	6	7
Bare kvaliteten på resultatene bør telle, ikke måten idrettutøvere får det til.	1	2	3	4	5	6	7
Idrettsutøvere i min idrett er presset til å ta prestasjonsmidler.	1	2	3	4	5	6	7
Idrettsutøvere som tar rusmidler bruke dem fordi de hjelper dem i idrett situasjoner.	1	2	3	4	5	6	7
Idrettsutøvere bør ikke føle deg skyldig om å bryte regler og ta ytelsesforbedrende midler.	1	2	3	4	5	6	7
Risikoene knyttet til doping er overdrevet.	1	2	3	4	5	6	7
Utøverne har ikke noe alternativ karriere valg unntatt sport.	1	2	3	4	5	6	7
Rekreasjonsrusmidler gi motivasjon til å trene og konkurrere på toppnivå.	1	2	3	4	5	6	7
Doping er en uunngåelig del av konkurranse idrett.	1	2	3	4	5	6	7
Rusmidler bidrar til å overvinne kjedsomhet under trening.	1	2	3	4	5	6	7
Det er ingen forskjell mellom doping, spesielt utstyr, og raske svømmedrakter som er brukt for å forbedre ytelsen.	1	2	3	4	5	6	7
Media bør diskutere mindre om doping.	1	2	3	4	5	6	7
Media blåser opp doping problemet.	1	2	3	4	5	6	7
Helseproblemer relatert til strenge treningsrutiner og skader er akkurat like ille som fra doping.	1	2	3	4	5	6	7
Legalisering av doping midler og metoder ville være fordelaktig for idrett.	1	2	3	4	5	6	7

Tror du at doping midler eller metoder bør være lovlig i elite idrett?
□ Ja, uten restriksjoner □ Ja, men med restriksjoner □ Aldri

Tror du at doping midler eller metoder bør være tillat for alle idrettsutøvere?
□ Ja, uten restriksjoner □ Ja, men med restriksjoner □ Aldri

Vil du bruke ulovlige doping midler eller metoder?
□ Ja, uten restriksjoner □ Ja, men med restriksjoner □ Aldri □ Ønsker ikke å svare

Ville du ha bruk ulovlige doping midler eller metoder hvis du visste at du ikke ville blitt tatt?
□ Ja, uten restriksjoner □ Ja, men med restriksjoner □ Aldri □ Ønsker ikke å svare

Har du hatt noen erfaringer med ulovlige doping midler eller metoder?
□ Ja □Ja, men kun for medisinske begrunnelser □Nei □ Ønsker ikke å svare

Bruker du ulovlige doping midler eller metoder nå?
□ Ja □Ja, men kun for medisinske begrunnelser □Nei □ Ønsker ikke å svare

Spørsmålene som følger omhandler ulike aspekter ved spising. Alle svarene er anonyme og det finnes ingen rett eller galt svar. Vennligst kryss nummeret som best stemmer med ditt svar.

	Sterkt uenig						Sterkt enig
			Hverken enig eller uenig				
Jeg er livredd for å være overvektig	1	2	3	4	5	6	7
Jeg unngår å spise når jeg er sulten	1	2	3	4	5	6	7
Jeg finner meg selv opptatt av mat	1	2	3	4	5	6	7
Jeg har spist ukontrollert der jeg føler at jeg ikke kunne stoppe	1	2	3	4	5	6	7
Jeg skjærer maten min opp i små biter	1	2	3	4	5	6	7
Jeg er klar over kalori innholdet av maten jeg spiser	1	2	3	4	5	6	7
Jeg unngår særlig matvarer med mye karbohydrat innhold (dvs. brød, ris, poteter, etc.)	1	2	3	4	5	6	7
Jeg føler at andre ville foretrekke hvis jeg spiste mer	1	2	3	4	5	6	7
Jeg kaster opp etter å ha spist	1	2	3	4	5	6	7
Jeg har sterke skyldfølelser etter å ha spist	1	2	3	4	5	6	7
Jeg er opptatt av et ønske om å bli tynnere	1	2	3	4	5	6	7
Jeg tenker på å brenne opp kalorier når jeg trener	1	2	3	4	5	6	7
Andre synes at jeg er for tynn	1	2	3	4	5	6	7
Jeg er opptatt av tanken på å ha fett på kroppen min	1	2	3	4	5	6	7
Jeg tar lengre tid enn andre til å spise mine måltider	1	2	3	4	5	6	7
Jeg unngår matvarer med sukker	1	2	3	4	5	6	7
Jeg spiser diett mat	1	2	3	4	5	6	7
Jeg føler at maten kontrollerer livet mitt	1	2	3	4	5	6	7
Jeg viser selv-kontroll rundt mat	1	2	3	4	5	6	7
Jeg føler at andre presset meg til å spise	1	2	3	4	5	6	7
Jeg gir for mye tid og tanke til mat	1	2	3	4	5	6	7
Jeg føler ubehag etter å ha spist godteri	1	2	3	4	5	6	7
Jeg spiser som jeg er på diett	1	2	3	4	5	6	7
Jeg liker åføle meg sulten	1	2	3	4	5	6	7
Jeg liker å prøve nye spennende matvarer	1	2	3	4	5	6	7
Jeg føler at jeg trenger å kaste opp etter måltider	1	2	3	4	5	6	7

1) Har du spist ukontrollert der du føler at du ikke kan stoppe? (Spise mye mer enn de fleste ville ha spist under samme forhold)
O Nei
O Ja
Hvor mange ganger i de siste 6 måneder? _____

2) Har du noen gang spilt syk (kastet opp) for å kontrollere vekten eller formen din?
O Nei
O Ja
Hvor mange ganger i de siste 6 måneder? _____

Har du noen gang brukt avføringsmidler, kosthold piller eller diuretikere (vann piller) for å kontrollere vekten eller form?
O Nei
O Ja
Hvor mange ganger i de siste 6 måneder? _____

4) Har du noen gang blitt behandlet for spiseforstyrrelser?
O Nei
O Ja
Når?

5) Har du nylig tenkt på eller forsøkt selvmord?
O Nei
O Ja
Når?

Du er:

Mann: ☐
Kvinne: ☐

Idrettslinje: Ja: ☐ Nei: ☐
Toppidretts student: Ja: ☐ Nei: ☐

Fødselsår: 1 9 ☐ ☐

Høyde i cm: ☐ ☐ ☐

Vekt i kg: ☐ ☐ ☐

Idrett (merk av hovedidretten din):

Individuelt:
Hopp: ☐
Friidrett: ☐
Skiskytting \Langrenn: ☐
Alpint\Snowboarding: ☐
Annet individuelt idrett: _____

Lag:
Ishockey: ☐
Fotball: ☐
Håndball: ☐
Annet lagidrett: _____

Ingen: ☐